7. REGULATIONS AND ADVISORIES

The international, national, and state regulations and guidelines regarding cyanide in air, water, and other media are summarized in Table 7-1.

ATSDR has derived an intermediate oral minimal risk level (MRL) of 0.05 mg/kg/day for cyanide based on a NOAEL of 4.5 mg/kg/day from a study in which 10 male and 10 female rats were given 0.2-l 2.5 mg/kg/day cyanide in the drinking water for 13 weeks, as sodium cyanide (NTP 1993).

EPA reference doses (RfDs) have been established for cyanide and its compounds. These RfDs range from $2x10^{-1}$ mg/kg/day for potassium cyanide to $5x10^{-3}$ mg/kg/day for copper cyanide. The RfD for potassium silver cyanide was based on weight loss and thyroid effects in several rat studies (Howard and Hanzel 1955; Philbrick et al. 1979), while the RfD for copper cyanide was based on decreased body and organ weights and liver and kidney effects in a intermediate-duration rat study (Gerhart 1987a). An EPA reference concentration (RfC) exists only for hydrogen cyanide; this RfC is $3x10^{-3}$ mg/m^3. The RfC was based on central nervous system and thyroid effects in a human occupational study (El Ghawabi et al. 1975).

The EPA has determined that cyanide is not classifiable as to its human carcinogenicity (Group D). No cancer classifications exist for the National Toxicology Program, IRIS, or IARC (no available data).

Several cyanide compounds are on the list of chemicals regulated under "The Emergency Planning and Community Right-to-Know Act of 1986" (EPCRA) (EPA 1988c). Section 313 of Title III of EPCRA requires owners and operators of certain facilities that manufacture, import, process, or otherwise use the chemicals on this list to report annually their release of those chemicals to any environmental media.

OSHA requires employers of workers who are occupationally exposed to cyanide to institute engineering controls and work practices to reduce and maintain employee exposure at or below permissible exposure limits (PEL). The employer must use engineering and work practice controls, if feasible, to reduce exposure to or below an 8-hour time-weighted average (TWA) of 5 mg/m^3 as cyanide. Respirators must be provided and used during the time period necessary to install or implement feasible engineering and work practice controls (OSHA 1974).

7. REGULATIONS AND ADVISORIES

Cyanide is regulated by the Clean Water Effluent Guidelines as stated in Title 40, Sections 400-475, of the Code of Federal Regulations. For each point source category, cyanide may be regulated as amenable or total cyanide. The point source categories for which cyanide is controlled include electroplating; metal finishing; organic chemicals; plastics and synthetic fibers; hydrogen peroxide manufacturing; iron and steel; nonferrous metals; steam electri-power; ferroalloy manufacturing; pharmaceuticals; battery manufacturing; aluminum forming; nonferrous metal forming; and coil coating.

Under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), food tolerance restrictions apply to various cyanide compounds when applied to growing crops (EPA 1971a, 1975a).

Under the Resource Conservation and Recovery Act (RCRA), cyanide is listed as a hazardous waste when it is a discarded commercial chemical product, off-specification species, container residue, or spill residue (EPA 1980c); a waste from non-specific sources (EPA 198 lc); or a waste from specific sources (EPA 1981c).

Table 7-1. Regulations and Guidelines Applicable to Cyanide

Agency	Description	Information	References
INTERNATIONAL			
Guidelines			
WHO	Drinking Water Guidelines	0.1 mg/L	WHO 1984
IARC	Group (Cancer ranking)	NA	
NATIONAL			
Regulations:			
a. Air:			
OSHA	List of Highly Hazardous Chemicals	Yes	29 CFR 1910.119, App. A; OSHA 1974
	Permissible Exposure Limit (TWA)	5 mg/m^3 (as CN)	29 CFR 1910.1000 OSHA 1974
EPA	Chemicals Produced by SOCMI Facilities Subject to Equipment Leak Standards	Yes	40 CFR 60.489 EPA 1983b
	Chemicals Produced by Facilities Subject to Standards for SOCMI Facilities	Yes	40 CFR 60.617 EPA 1990b
	Chemicals Subject to Standards of Performance for VOC Emissions from SOCMI Distillation Operations	Yes	40 CFR 60.667 EPA 1990c
	Proposed Rule: Deminimis Emissions for Determinations Regarding Modifications to Major Sources		59 FR 15504 EPA 1994a
	Sodium cyanide	0.1 ton/yr	
	Potassium cyanide	0.1 ton/yr	
	Other cyanide compounds	5 tons/yr	
b. Water			
EPA	Designation of Hazardous Substance Under the Federal Water Pollution Control Act	Yes	40 CFR 116.4 EPA 1978a
	Reportable Quantities of Hazardous Substances Designated Pursuant to the Clean Water Act		40 CFR 117.3 EPA 1986a
	Amnonium thiocyanate	5,000 lb.	
	Calcium cyanide	10 lb.	
	Cyanogen chloride	*10 lb.*	
	Hydrogen cyanide	10 lb.	
	Potassium cyanide	10 lb.	
	Sodium cyanide	10 lb.	
	NPDES Permit Application	Yes	40 CFR 122.21 EPA 1983c
	NPDES Storm Water Discharges	Yes	40 CFR 122.26 EPA 1990d
	NPDES Permit Application Testing Requirements	Yes	40 CFR 122, App. D EPA 1983c
	State Program Requirements: Non-compliance and Program Reporting	Yes	40 CFR 123.45 *EPA 1985b*

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information	References
NATIONAL (cont.)			
	Proposed Rule: Great Lakes System Water Quality Standards		58 FR 20802 EPA 1993a
	Acute water quality criteria for protecting aquatic life	22 µg/L (free cyanide)	
	Chronic water quality criteria for protection of aquatic life	5.2 µg/L (free cyanide)	
	Water quality critieria for protection of human health		
	Drinking	$8x10^5$ ng/L	
	Nondrinking	$6x10^7$ ng/L	
	Identification of Test Procedure for Analysis of Pollutants	Yes	40 CFR 136.3 EPA 1973
	National Primary Drinking Water Regulations Inorganic Chemical Sampling and Analytical Requirements	Yes	40 CFR 141.23 EPA 1991a
	Public Notification	Yes	40 CFR 141.32 EPA 1987c
	MCLs	0.2 mg/L (as free cyanide)	40 CFR 141.62 EPA 1991a
	Proposed Rule: Drinking Water Sampling and Analytical Requirements	Yes	58 FR 65622 EPA 1993b
	Proposed Rule: Disinfection By - Product Precursor Removal Information Collection Requirements	Yes	59 FR 6332 EPA 1994b
	Effluent Limitations		
	National Pretreatment Standards		
	Removal credits	Yes	40 CFR 403.7 EPA 1984b
	Reporting requirements for POTWs and industrial users	Yes	40 CFR 403.12 EPA 1981a
	Sampling procedures	Yes	40 CFR 403, App. E EPA 1984c
	Electroplating Point Source Category Applicability and Compliance Dates	Yes	40 CFR 413 EPA 1981b
	Definitions	Yes	40 CFR 413 EPA 1981b
	Pretreatment standards for existing sources	1-Day Max. / 4-Day Average Max.	40 CFR 413 EPA 1981b
	discharging <38,000 L/day, cyanide amenable (CN, A)	5.0 mg/L / 2.7 mg/L	
	discharging ≥38,000 L/day, total cyanide (CN, T)	1.9 mg/L / 1.0 mg/L	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information		References
NATIONAL (cont.)				
	Organic Chemicals, Plastics, and Synthetic Fibers Category			
	General Applicability	Yes		40 CFR 414.11 EPA 1987d
	Bulk organic chemicals, applicability	Yes		40 CFR 414.70 EPA 1987d
	Direct discharge point sources with and without end-of-pipe biological treatment (total cyanide)			40 CFR 414.91 EPA 1987d 40 CFR 414.101
	1-day maximum	1,200 µg/L		EPA 1987d
	maximum monthly average	420 µg/L		
	Cyanide-bearing waste streams	Yes		40 CFR 414, App. A EPA 1987d
	Hydrogen Peroxide Manufacturing			40 CFR 415, Subpart I EPA 1982a
	Definition	Yes		
	Effluent reduction using best practicable control technology currently available (BPT):			
	1-day maximum (CN, A)	0.00040 kg/kkg		
	30-day average (CN, A)	0.00020 kg/kkg		
	Hydrogen Cyanide Production (CN, A)			40 CFR 415, Subpart AP EPA 1982a
	Effluent reduction using BPT:			
	1-day maximum	0.10 kg/kkg		
	30-day average	0.021 kg/kkg		
	Effluent reduction using best available technology economically achievable (BAT):			
	1-day maximum	0.10 kg/kkg		
	30-day average	0.021 kg/kkg		
	Iron and Steel Manufacturing			
	General definition	Yes		40 CFR 420.02 EPA 1982b
	Cokemaking subcategory (Total cyanide)	1-day maximum	30-day average	40 CFR 420 Subpart A EPA 1982b
	Effluent reduction using BPT:			
	By-product cokemaking-iron and steel	0.0657 kg/kkg	0.0219 kg/kkg	
	By-product cokemaking-merchant	0.0701 kg/kkg	0.0234 kg/kkg	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information		References
NATIONAL (cont.)				
	Effluent reduction using BAT:			
	By-product cokemaking-iron and steel	0.00638 kg/kkg	0.00351 kg/kkg	
	By-product cokemaking-merchant	0.00709 kg/kkg	0.00390 kg/kkg	
	New source performance standard (NSPS):			
	By-product cokemaking-iron and steel	0.00638 kg/kkg	0.00351 kg/kkg	
	By-product cokemaking-merchant	0.00709 kg/kkg	0.00390 kg/kkg	
	Pretreatment standards for existing sources (PSES):			
	By-product cokemaking-iron and steel	0.0172 kg/kkg	0.00859 kg/kkg	
	By-product cokemaking-merchant	0.0200 kg/kkg	0.0100 kg/kkg	
	Pretreatment standards for new sources (PSNS):			
	By-product cokemaking-iron and steel	0.0172 kg/kkg	0.00859 kg/kkg	
	By-product cokemaking-merchant	0.0200 kg/kkg	0.0100 kg/kkg	
	Sintering subcategory (total cyanide)			40 CFR 420 Subpart B EPA 1982b
	Effluent reduction using BAT	0.00300 kg/kgg	0.00150 kg/kkg	
	NSPS	0.00100 kg/kgg	0.000501 kg/kkg	
	PSES	0.00300 kg/kkg	0.00150 kg/kkg	
	PSNS	0.00100 kg/kkg	0.000501 kg/kkg	
	Ironmaking subcategory (total cyanide)			40 CFR 420 Subpart C EPA 1982b
	Effluent reduction using BPT	0.0234 kg/kkg	0.00782 kg/kkg	
	Effluent reduction using BAT	0.00175 kg/kkg	0.000876 kg/kkg	
	NSPS	0.000584 kg/kkg	0.000292 kg/kkg	
	PSES -ironblast furnace	0.00175 kg/kkg	0.000876 kg/kkg	
	PSES-existing indirect discharges	0.00175 kg/kkg	0.000876 kg/kkg	
	PSNS	0.000584 kg/kkg	0.000292 kg/kkg	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information		References
NATIONAL (cont.)				
	Salt bath descaling subcategory (total cyanide)			40 CFR 420 Subpart H EPA 1982b
	Effluent reduction using BPT and BAT; NSPS; PSES; and PSNS for salt bath descaling, reducing			
	- batch	0.00102 kg/kkg	0.000339 kg/kkg	
	- continuous	0.00569 kg/kkg	0.00190 kg/kkg	
	Nonferrous Metals Manufacturing			40 CFR 421.3
	General monitoring and reporting	Yes		EPA 1984d
	Primary aluminum smelting subcategory	1-day maximum (ng/kg of cryolite re-covered)	monthly average maximum (ng/kg of cryolite re-covered)	40 CFR 421 Subpart B EPA 1984d
	Effluent reduction using BAT, PSNS and PSNS for cathode reprocessing (operated with dry potline scrubbing commingled and not commingled with other process or nonprocess coaters	157.600	70.060	
	BAT effluent limiations for: - cathode reprocessing (with wet potline scrubbing	0.000	0.000	
	-potline wet air pollution control (operated with cathode reprocessing and commingled and not commingled with other process on nonprocess waters)	3.771	1.676	
	Primary beryllium subcategory BPT (total cyanide)			40 CFR 421, Subpart O EPA 1985c
	- minimum	0.000 mg/kg	0.000 mg/kg	
	- maximum	651.300 mg/kg	269.500 mg/kg	
	BAT, NSPS, PSNS (total cyanide) - minimum	0.000 mg/kg	0.000 mg/kg	
	- maximum	449.200 mg/kg	179.700 mg/kg	
	Secondary precious metals subcategory			40 CFR 421, Subpart X EPA 1985c
	BPT (total cyanide) - minimum	0.000 mg/troy oz.	0.000 mg/troy oz.	
	- maximum	20.820 mg/troy oz.	8.616 mg/troy oz.	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information		References
NATIONAL (cont.)				
	BAT, NSPS, PSES, & PSNS (total cyanide)			
	- minimum	0.000 mg/troy oz.	0.000 mg/troy oz.	
	- maximum	10.000 mg/troy oz.	4.000 mg/troy oz.	
	Secondary tin subcategory BPT (total cyanide)			40 CFR 421, Subpart AA EPA 1985c
	- minimum	0.010 mg/kg	0.004 mg/kg	
	- maximum	33.35 mg/kg	13.80 mg/kg	
	BAT, NSPS, PSES, & PSNS (total cyanide)			
	- minimum	0.007 mg/kg	0.003 mg/kg	
	- maximum	23.00 mg/kg	9.20 mg/kg	
	Primary zirconium and hafnium BPT (total cyanide)			40 CFR 421, Subpart AE EPA 1985c
	- minimum	0.000 mg/kg	0.000 mg/kg	
	- maximum	12.610 mg/kg	5.216 mg/kg	
	BAT, NSPS, PSNS (total cyanide)			
	- minimum	0.000 mg/kg	0.000 mg/kg	
	- maximum	8.694 mg/kg	3.478 mg/kg	
	Steam Electric Power Generating: Priority Pollutants	Yes		40 CFR 423, App A EPA 1982c
	Ferroalloy Manufacturing: Covered Electric Furnaces	1-day maximum	30-day average	40 CFR 424 Subpart B EPA 1974
	BPT (total cyanide)	0.004 kg/Mwh	0.002 kg/Mwh	
	BAT & NSPS (total cyanide)	0.0005 kg/Mwh	0.0003 kg/Mwh	
	Ferroalloy Manufacturing: Covered			40 CFR 424 Subpart D EPA 1975a
	Calcium carbide furnace BPT & BAT (total cyanide)	0.0056 kg/kkg	0.0028 kg/kkg	
	Metal finishing			40 CFR 433 Subpart A EPA 1983d
	BPT, BAT, PSES, & PSNS (total cyanide)	1.20 mg/L	0.65 mg/L	
	BPT, BAT, PSES & PSNS (amenable cyanide)	0.86 mg/L	0.32 mg/L	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information		References
NATIONAL (cont.)				
	Pharmaceutical Manufacturing			40 CFR 439 EPA 1983e
	BPT, BAT, NSPS, PSES, & PSNS (total cyanide)	33.5 mg/L	9.4 mg/L	
	Battery Manufacturing: Zinc Subcategory (total cyanide)			40 CFR 461 Subpart G EPA 1984e
	BPT	2.54 mg/kg	1.05 mg/kg	
	BAT, PSES	0.38 mg/kg	0.16 mg/kg	
	NSPS, PSNS	0.039 mg/kg	0.016 mg/kg	
	Coil Coating			40 CFR 465 EPA 1982d
	Monitoring and reporting	Yes		
	Steel basis material subcategory	1-day maximum	Monthly avg. maximum	
	BPT	0.80 mg/m^2	0.33 mg/m^2	
	BAT, PSES	0.34 mg/m^2	0.14 mg/m^2	
	NSPS, PSNS	0.063 mg/m^2	0.025 mg/m^2	
	Galvanized basis material subcategory			
	BPT	0.76 mg/m^2	0.32 mg/m^2	
	BAT, PSES	0.26 mg/m^2	0.11 mg/m^2	
	NSPS, PSNS	0.07 mg/m^2	0.028 mg/m^2	
	Aluminum basis material subcategory			
	BPT	0.98 mg/m^2	0.41 mg/m^2	
	BAT, PSES	0.29 mg/m^2	0.12 mg/m^2	
	NSPS, PSNS	0.095 mg/m^2	0.038 mg/m^2	
	Aluminum Forming Monitoring	Yes		40 CFR 467 EPA 1983f

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information		References
NATIONAL (cont.)				
	Rolling with neat oil subcategory	1-day maximum	Monthly avg. maximum	
	BPT (total cyanide)			
	- minimum	0.00057 mg/off-kg	0.00024 mg/off-kg	
	- maximum	4.61 mg/off-kg	1.91 mg/off-kg	
	BAT (total cyanide)			
	- minimum	0.00057 mg/off-kg	0.00024 mg/off-kg	
	- maximum	4.04 mg/off-kg	1.67 mg/off-kg	
	NSPS (total cyanide)			
	- minimum	0.00039 mg/off-kg	0.00016 mg/off-kg	
	- maximum	0.41 mg/off-kg	0.17 mg/off-kg	
	PSES (total cyanide)			
	- minimum	0.00057 mg/off-kg	0.00024 mg/off-kg	
	- maximum	0.59 mg/off-kg	0.25 mg/off-kg	
	PSNS (total cyanide)			
	- minimum	0.00039 mg/off-kg	0.00016 mg/off-kg	
	- maximum	0.41 mg/off-kg	0.17 mg/off-kg	
	Rolling with emulsions subcategory			
	BPT (total cyanide)			
	- minimum	0.038 mg/off-kg	0.016 mg/off-kg	
	- maximum	4.61 mg/off-kg	1.91 mg/off-kg	
	BAT, PSES (total cyanide)			
	- minimum	0.038 mg/off-kg	0.016 mg/off-kg	
	- maximum	0.59 mg/off-kg	0.25 mg/off-kg	
	NSPS, PSNS (total cyanide)			
	- minimum	0.026 mg/off-kg	0.011 mg/off-kg	
	- maximum	0.41 mg/off-kg	0.16 mg/off-kg	
	Extrusion subcategory			
	BPT (total cyanide)			
	- minimum	0.052 mg/off-kg	0.022 mg/off-kg	
	- maximum	4.61 mg/off-kg	1.91 mg/off-kg	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information		References
NATIONAL (cont.)				
	BAT, PSES (total cyanide)			
	- minimum	0.052 mg/off-kg	0.022 mg/off-kg	
	- maximum	1.2 mg/off-kg	0.5 mg/off-kg	
	NSPS (total cyanide)			
	- minimum	0.036 mg/off-kg	0.024 mg/off-kg	
	- maximum	0.41 mg/off-kg	0.17 mg/off-kg	
	PSNS (total cyanide)			
	- minimum	0.036 mg/off-kg	0.015 mg/off-kg	
	- maximum	0.41 mg/off-kg	0.17 mg/off-kg	
	Forging subcategory			
	NSPS, PSNS (total cyanide)			
	- minimum	0.010 mg/off-kg	0.004 mg/off-kg	
	- maximum	0.41 mg/off-kg	0.163 mg/off-kg	
	PSES			
	- minimum	0.015 mg/off-kg	0.006 mg/off-kg	
	- maximum	1.2 mg/off-kg	0.5 mg/off-kg	
	Drawing with neat oil subcategory			
	BPT (total cyanide)			
	- minimum	0.00057 mg/off-kg	0.00024 mg/off-kg	
	- maximum	4.61 mg/off-kg	1.91 mg/off-kg	
	BAT			
	- minimum	0.0006 mg/off-kg	0.0002 mg/off-kg	
	- maximum	0.591 mg/off-kg	0.245 mg/off-kg	
	NSPS, PSNS			
	- minimum	0.0004 mg/off-kg	0.0002 mg/off-kg	
	- maximum	0.408 mg/off-kg	0.163 mg/off-kg	
	PSES			
	- minimum	0.0006 mg/off-kg	0.0003 mg/off-kg	
	- maximum	0.591 mg/off-kg	0.245 mg/off-kg	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information		References
NATIONAL (cont.)	Drawing with emulsions of soaps subcategory			
	BPT			
	- minimum	0.0006 mg/off-kg	0.0003 mg/off-kg	
	- maximum	4.61 mg/off-kg	1.91 mg/off-kg	
	BAT, PSES			
	- minimum	0.0006 mg/off-kg	0.0003 mg/off-kg	
	- maximum	0.591 mg/off-kg	0.25 mg/off-kg	
	NSPS, PSNS			
	- minimum	0.0004 mg/off-kg	0.0002 mg/off-kg	
	- maximum	0.408 mg/off-kg	0.16 mg/off-kg	
	Nonferrous Metals Forming & Metal Powders			40 CFR 471 EPA 1985d
	Precious metal forming	1-day maximum	Maximum monthly average	
	BPT			
	- minimum	0.0009 mg/off-kg	0.0004mg /off-kg	
	- maximum	3.51 mg/off-kg	1.45 mg/off-kg	
	BAT, NSPS, PSES, PSNS			
	- minimum	0.0009 mg/off-kg	0.0004 mg/off-kg	
	- maximum	1.94 mg/off-kg	0.802 mg/off-kg	
	Titanium forming subcategory			
	BPT			
	- minimum	0.010 mg/off-kg	0.004 mg/off-kg	
	- maximum	8.47 mg/off-kg	3.51 mg/off-kg	
	BAT, NSPS, PSES, PSNS			
	- minimum	0.010 mg/off-kg	0.005 mg/off-kg	
	- maximum	0.84 mg/off-kg	0.351 mg/off-kg	
	Zinc forming subcategory			
	BPT			
	- minimum	0.0004 mg/off-kg	0.0002 mg/off-kg	
	- maximum	1.04 mg/off-kg	0.430 mg/off-kg	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information		References
NATIONAL (cont.)				
	BAT, NSPS, PSNS			
	- minimum	0.0003 mg/off-kg	0.0001 mg/off-kg	
	- maximum	0.338 mg/off-kg	0.135 mg/off-kg	
	Zirconium-hafrium forming subcategory			
	BPT			
	- minimum	0.005 mg/off-kg	0.002 mg/off-kg	
	- maximum	9.11 mg/off-kg	3.77 mg/off-kg	
	BAT, NSPS, PSES, PSNS			
	- minimum	0.005 mg/off-kg	0.002 mg/off-kg	
	- maximum	0.911 mg/off-kg	0.377 mg/off-kg	
	Metal powders subcategory			
	BPT			
	- minimum	0.004 mg/off-kg	0.002 mg/off-kg	
	- maximum	2.55 mg/off-kg	1.06 mg/off-kg	
	BAT, PSES			
	- minimum	0.004 mg/off-kg	0.002 mg/off-kg	
	- maximum	2.55 mg/off-kg	1.06 mg/off-kg	
	NSPS, PSNS			
	- minimum	0.004 mg/off-kg	0.002 mg/off-kg	
	- maximum	2.29 mg/off-kg	0.948 mg/off-kg	
c. Food				
EPA	Tolerances for Related Pesticide Chemicals	Yes		40 CFR 180.3 EPA 1976
	Tolerances for Residues of Calcium Cyanide:			40 CFR 180.125 EPA 1971
	Grains	25 ppm		
	Cucumbers, lettuce, radishes and tomatoes	5 ppm		
	Tolerances for Residues of Hydrogen Cyanide:	25 - 250 ppm		40 CFR 180.130 EPA 1971
	Exemptions From the Requirement of a Tolerance	Yes		40 CFR 180.1001 EPA 1971
	Tolerances for Pesticides in Food (Hydrogen Cyanide):	50 - 200 ppm		40 CFR 185.3600 EPA 1975b

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information	References
NATIONAL (cont.)			
d. Other EPA	Pesticides Classified for Restricted Use	Yes	40 CFR 152.175 EPA 1978b
	List of Hazardous Constituents	Yes	40 CFR 258, App. II EPA 1991b
	Definition of Hazardous Waste	Yes	40 CFR 261.3 EPA 1992a
	Characteristics of Reactivity	Yes	40 CFR 261.23 EPA 1980b
	Hazardous Waste from Nonspecific Sources	Yes	40 CFR 261.31 EPA 1981c
	Discarded Commercial Chemical Products, Off-specification Species, Container Residues, and Spill Residues	Yes	40 CFR 261.33 EPA 1980c
	Basis for Listing Hazardous Waste	Yes	40 CFR 261, App. VII EPA 1981c
	Hazardous Constituents	Yes	40 CFR 261, App. VIII EPA 1988b
	Excluded Waste	Yes	40 CFR 261, App. IX EPA 1984f
	Disposal in Landfills of Small Containers of Hazardous Waste in Overpacked Drums	Yes	40 CFR 264.316 EPA 1982e
	Recordkeeping Instructions for Hazardous Waste TSDF	Yes	40 CFR 264, App I EPA 1980c
	Hazardous Waste TSDF - Incompatible Waste	Yes	40 CFR 264, App V EPA 1981d
	Groundwater Monitoring List for Hazardous Waste TSDF	Yes	40 CFR 264, App IX EPA 1987e
	Interim Status Standards for Hazardous Waste TSDF - Recordkeeping	Yes	40 CFR 265, App, I EPA 1980d
	Interim Status Standards for Hazardous Waste TSDF - Potentially Incompatible Waste	Yes	40 CFR 265, App V EPA 1980d
	Health-Based Limits for Exclusion of Waste - Derived Residues: Calcium cyanide Copper cyanide Cyanogen; sodium cyanide Hydrogen cyanide Potassium cyanide Potassium silver cyanide	 $1x10^{-6}$ mg/kg $2x10^{-1}$ mg/kg 1 mg/kg $7x10^{-5}$ mg/kg 2 mg/kg 7 mg/kg	40 CFR 266, App VII EPA 1991c
	Land Disposal - Dilution Prohibited as a Substitute for Treatment	Yes	40 CFR 268.3 EPA 1990e
	Land Disposal - Wastes to be Evaluated by August 8, 1988	Yes	40 CFR 268.10 EPA 1986b

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information		References
NATIONAL (cont.)	Land Disposal - Wastes to be Evaluated by June 8, 1989	Yes		40 CFR 268.11 EPA 1986b
	Land Disposal - Wastes to be Evaluated by May 8, 1990	Yes		40 CFR 268.12 EPA 1986b
	Land Disposal - Ignitable and Corrosive Wastes Whose Treatment Standards Were Vacated	Yes		40 CFR 268.37 EPA 1993c
	Land Disposal - Treatment Standards Expressed as Concentrations in Waste Extract	Wastewater	Non-wastewater	40 CFR 268.41 EPA 1986b
	Waste code PO99, potassium silver cyanide	NA	0.072 mg/L	
	Land Disposal - Treatment Standards Expressed as Specified Technologies	Yes		40 CFR 268.42 EPA 1986b
	Land Disposal - Treatment Standards Expressed as Waste Concentrations	Wastewater	Non-wastewater	40 CFR 268.43 EPA 1988c
	D003 (total cyanides)	(reserved)	590 mg/kg	
	D003 (amenable cyanides)	0.86 mg/L	30 mg/kg	
	F006, F019 (total cyanides)	1.2 mg/L	590 mg/kg	
	F006, F019 (amenable cyanides)	0.86 mg/L	30 mg/kg	
	F007, F008, F009 (total cyanides)	1.9 mg/L	590 mg/kg	
	F007, F008, F009 (amenable cyanides)	0.1 mg/L	30 mg/kg	
	F010 (total cyanides)	1.9 mg/L	1.5 mg/kg	
	F010 (amenable cyanides)	0.1 mg/L	NA	
	F011, F012, P013, P021, P029, P030, P063, P074, P098, P099, P104, P106, P121 (total cyanides)	1.9 mg/L	110 mg/kg	
	F011, F012, P013, P021, P029, P030, P063, P074, P098, P099, P104, P106, P121 (amenable cyanides)	0.1 mg/L	9.1 mg/kg	
	F037, K048, K049, K050, K051, K052 (total cyanides)	0.028 mg/L	1.8 mg/kg	
	K005, K007 (total cyanides)	0.74 mg/L	reserved	
	K011, K013, K014 (total cyanides)	21 mg/L	57 mg/kg	
	K060	1.9 mg/L	1.2 mg/kg	
	K086	1.9 mg/L	1.5 mg/kg	
	Land Disposal - Variance From Treatment Standards	Yes		40 CFR 268.44 EPA 1986b
	Land Disposal - Treatment of Hazardous Debris	Yes		40 CFR 268.45 EPA 1992b

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information	References
NATIONAL (cont.)	Land Disposal - Alternative Treatment Standards	Yes	40 CFR 268.46 EPA 1992b
	Proposed Rule - Treatment Standards for Land Disposal	Yes	58 FR 48092 EPA 1993d
	NCP Chemicals-Use of Dispersants and Other	Yes	40 CFR 300.915 EPA 1990f
	NCP-Dispersant Effectiveness and Toxicity	Yes	40 CFR 300, App C EPA 1984g
	Proposed Rule - NCP Data Requirements	Yes	58 FR 54702 EPA 1993e
	List of Hazardous Substances and Reportable Quantities		40 CFR 302.4 EPA 1985e
	Ammonium thiocyanate	5,000 lbs	
	Calcium cyanide, cyanogen chloride, sodium cyanide, copper cyanide	10 lbs	
	Cyanides (soluble salts & complexes)	10 lbs	
	Cyanogen	100 lbs	
	Potassium silver cyanide	1 lb	
	Proposed Rule - Reportable Quantity Adjustments	Yes	58 FR 54836 EPA 1993f
	Emergency Planning - Extremely Hazardous Substances and Their Threshold Planning Quantities		40 CFR 355, App A EPA 1987f
	Potassium cyanide, sodium cyanide	100 lbs	
	Potassium silver cyanide	500 lbs	
	Toxic Chemical Release Reporting - List of Chemicals	Yes	40 CFR 372.65 EPA 1988d
	Chemical Information Rules - Chemical List	Yes	40 CFR 712.30 EPA 1982f
Guidelines:			
a. Air:			
ACGIH	*Threshold Limit Values for Occupational* Exposure (TLV-TWA)		*ACGIH 1996*
	Cyanogen	21 mg/m^3	
	TLV - Ceiling		
	Hydrogen cyanide, sodium cyanide, calcium cyanide, potassium cyanide, acetone cyanohydrin	5 mg/m^3	
	Cyanogen chloride	*0.75 mg/m^3*	
NIOSH	Recommended Exposure Limit for Occupational Exposure (TWA)		NIOSH 1992
	Cyanogen	20 mg/m^3	
	Recommended Exposure Limit for Occupational Exposure (Ceiling)		
	Calcium, hydrogen, potassium, and sodium cyanide	5 mg/m^3	
	Cyanogen chloride	0.6 mg/m^3	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information	References
NATIONAL (cont.)	Immediately Dangerous to Life & Health		NIOSH 1990
	Potassium and sodium cyanide		
	Hydrogen cyanide	50 mg/m^3 50 ppm	
b. Water:			
EPA	1-d Health Advisory (cyanide)	0.22 mg/L (child)	EPA 1995
	10-d Health Advisory (cyanide)	0.22 mg/L (child)	
	Lifetime Health Advisory (cyanide)	0.2 mg/L (adult)	
	Longer-term Health Advisory (cyanide)	0.2 mg/L (child) 0.8 mg/L (adult)	
	Maximum Contaminant Level	0.2 mg/L	EPA 1995
	Copper cyanide, cyanide, potassium silver cyanide, sodium cyanide		
	Maximum Contaminant Level Goal		
	Cyanide, potassium silver cyanide, sodium cyanide, potassium cyanide	0.2 mg/L	IRIS 1996
	Copper cyanide	1.3 mg/L	
	Potassium cyanide	0.2 mg/L (cyanide)	
	Cancer Classification		
	Cyanide	D[a]	
	Hazard Ranking		
	RfD Free cyanide, hydrogen cyanide)	2x10^{-2} mg/kg/day (UF:100)	
	Calcium cyanide, cyanogen, sodium cyanide	4x10^{-2} mg/kg/day (UF:100)	
	Copper cyanide	5x10^{-3} mg/kg/day (UF:1000)	
	Potassium cyanide, cyanogen chloride	5x10^{-2} mg/kg/day (UF:100)	
	Potassium silver cyanide	2x10^{-1} mg/kg/day (UF:100)	
	RfC Hydrogen cyanide	3x10^{-3} mg/m^3 (UF:1000)	
	Ambient Water Quality Criteria for Human Health	2x10^2 µg/L (water and fish)	
	Potassium silver cyanide, sodium cyanide, potassium cyanide, copper cyanide		
	Ambient Water Quality Criteria for Aquatic Organisms	2.2x10^1 µg/L (freshwater acute)	
	Sodium cyanide, potassium cyanide	5.2 µg/L (freshwter chronic) 1 µg/L (marine acute)	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information	References
NATIONAL (cont.)			
	Copper cyanide	9.2 µg/L (freshwater acute) 6.5 µg/L (freshwater chronic) 2.9 µg/L (marine acute)	
STATE			
Regulations and Guidelines: a. Air			
	Average acceptable ambient air concentrations		NATICH 1992
AZ			
Hydrogen cyanide	1-hour average	40 µg/m^3	
	24-hour average	40 µg/m^3	
CT			
Cyanides	8-hour average	100 µg/m^3	
Hydrogen cyanide	8-hour average	220 µgm/^{3}	
Cyanogen	8-hour average	400 µg/m^3	
FL-Ft Ldle			
Cyanide	8-hour average	0.5 mg/m^3	
Hydrogen cyanide	8-hour average	0.1 mg/m^3	
Cyanogen	8-hour average	0.2 mg/m^3	
FL-Pinella			
Hydrogen cyanide	8-hour average	100 µg/m^3	
	24-hour average	24 µg/m^3	
	Annual	20 µg/m^3	
Potassium cyanide	8-hour average	50 µg/m^3	
	24-hour average	12.0 µg/m^3	
	Annual	50.0 µg/m^3	
Calcium cyanide	Annual	30.0 µg/m^3	
Copper(1) cyanide	Annual	5.00 µg/m^3	
Cyanogen	8-hour average	200 µg/m^3	
	24-hour average	48.0 µg/m^3	
	Annual	30.0 µg/m^3	
Cyanogen chloride	8-hour average	6.00 µg/m^3	
	24-hour average	1.44 µg/m^3	
FL-Tampa			
Cyanide	8-hour average	0.05 mg/m^3	
Cyanogen	8-hour average	0.2 mg/m^3	
LA			
Hydrogen cyanide	8-hour average	260 µg/m^3	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information	References
STATE (cont.)			
NV			
Hydrogen cyanide	8-hour average	0.238 mg/m^3	
Potassium cyanide	8-hour average	0.119 mg/m^3	
Cyanogen	8-hour average	0.476 mg/m^3	
Cyanogen chloride	8-hour average	0.014 mg/m^3	
NY			
Cyanide	1-year average	16.7 µg/m^3	
Hydrogen cyanide	1-year average	33.0 µg/m^3	
Potassium cyanide	1-year average	17.0 µg/m^3	
Cyanogen	1-year average	66.7 µg/m^3	
NC			
Hydrogen cyanide	1-hour average	1.10 mg/m^3	
	24-hour average	0.14 mg/m^3	
NC-For. Co.			
Hydrogen cyanide	1-hour average	1.10 mg/m^3	
	24-hour average	0.14 mg/m^3	
ND			
Cyanide	8-hour average	0.05 mg/m^3	
Hydrogen cyanide	1-hour average	0.11 mg/m^3	
Cyanogen	8-hour average	0.21 mg/m^3	
Cyanogen chloride	1-hour average	0.0075 mg/m^3	
OK			
Hydrogen cyanide	24-hour average	51.0 µg/m^3	
SC			
Cyanide	24-hour average	125 µg/m^3	
Hydrogen cyanide	24-hour average	250 µg/m^3	
Cyanogen	24-hour average	500 µg/m^3	
SD			
Cyanide	8-hour average	100 µg/m^3	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information	References
STATE (cont.)			
TX			
Cyanide	30-minute average	50 µg/m^3	
Hydrogen cyanide	Annual	5 µg/m^3	
Potassium cyanide	30-minute average	50 µg/m^3	
	Annual	5 µg/m^3	
Cyanogen	30-minute average	210 µg/m^3	
	Annual	21.0µg/m^3	
Cyanogen chloride	30-minute average	7.50 µg/m^3	
	Annual	0.75 µg/m^3	
VA			
Cyanide	24-hour average	83 µg/m^3	
Hydrogen cyanide	24-hour average	92 µg/m^3	
Cyanogen	24-hour average	350 µg/m^3	
Cyanogen chloride	24-hour average	6.3 µg/m^3	
VT			
Cyanide	8-hour average	500 µg/m^3	
WA-SWest			
Hydrogen cyanide	24-hour average	33.3 µg/m^3	
Potassium cyanide	24-hour average	16.7 µg/m^3	
Cyanogen	24-hour average	66.6 µg/m^3	
Cyanogen chloride	24-hour average	2.00 µg/m^3	
b. Water:			
	Water Quality: Human Health		
AZ	Drinking water guideline	220 µg/L	FSTRAC 1990
FL	Domestic/Drinking	200 µg/L	Sittig 1994
KS	Drinking water guideline	154 µg/L	FSTRAC 1990
MA	Drinking water guideline	140 µg/L	
ME	Drinking water guideline	154 µg/L	
MI	Domestic/Drinking	150 µg/L (free)	Sittig 1994
MN	Drinking water guideline	154 µg/L	FSTRAC 1990
NH	Drinking water guideline	154 µg/L	
NJ	Domestic/Drinking	200 µg/L	Sittig 1994
NY	Domestic/Drinking	100 µg/L	
OR	Domestic/Drinking	200 µg/L	
RI	Drinking water guideline	150 µg/L	FSTRAC 1990
TN	Domestic/Drinking	200 µg/L	Sittig 1994
VT	Drinking water standard	154 µg/L	FSTRAC 1990

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information	References
STATE (cont.)	Water Quality: Human Health		CELDs 1994
AL	Consumption of water and fish	No value given	
	Fish consumption only	No value given	
AZ	Domestic water source (DWS)	140 µg/L (T)	
	Fish consumption (FC)	210,000 µg/L (T)	
	Full body contact (FBC)	3,100 µg/L (T)	
	Partial body contact (PBC)	3,100 µg/L (T)	
CT	Degree of treatment		
	Disinfection and chemical	0.01 mg/L	
	Complete	0.2 mg/L	
	Maximum permissible level	0.2 mg/L	
CO		0.20 mg/L	
DC	Class C	0.003 mg/L	
	Class D	0.2 mg/L	
FL	MCL	0.2 mg/L	
	Criteria for surface waters, Class I - V	5.0 µg/L	
HI	Freshwater: acute	22 µg/L	
	Freshwater: chronic	5.2 µg/L	
	Saltwater: acute	1 µg/L	
	Saltwater: chronic	1 µg/L	
	Fish consumption	No standard (NS)	
IA	MCL: Class B waters	0.005 mg/L	
	Class C waters	0.02 mg/L	
IL	MCL	0.2 mg/L	
ID	MCL	0.2 mg/L	
IN	Continuous (4-day average) Point of Water Intake	200 µg/L	
KY	Maximum Allowable Instream Concentration (free cyanide)		
	Chronic	5 µg/L	
	Acute	22 µgL	
	MCL: Domestic Water Supply (free cyanide)	0.200 mg/L	
MN	Class A & B Waters (CN)	0.01 mg/L	
	Class D Waters (CN)	0.2 mg/L	
MS	Freshwater: Acute	22 µg/L	
	Chronic	5.2 µg/L	
	Saltwater: Acute	1.0 µg/L	
	Chronic	1.0 µg/L	
NH	MCL (CN)	0.01 mg/L	
	Municipal/Domestic	0.2 mg/L	
NJ	Ground-water Quality: Class GWl	0.2 mg/L	
	GW2 & GW3	0.2 mg/L	
NM	Groundwater (CN)	0.2 mg/L	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information	References
STATE (cont.)			
NY	Groundwater Effluent Standards: Max. Allowable Concentration	400 µg/L	
	Surface Waters and Groundwater		
	A, A-S, AA, AA-S	100 µg/L	
	GA	100 µg/L	
	Freshwater	5.2-22 µg/L	Sittig 1994
	Saltwater	1.0 µg/L	
NC	Class GS Groundwater	0.154 mg/L	CELDs 1994
OH	30-day average	200 µg/L	
OK	Max. Allowable Levels	0.2 mg/L	
UT	MCL (free cyanide)	0.2 mg/L	
VA	Groundwater	0.005 mg/L	
VT	Class A or B Waters	200 µg/L	
WY	MCL - Groundwaters	0.2 mg/L	
WI	Public Water Supplier (total cyanide)		
	Warmwater sport fish communities	0.6 mg/L	
	Cold water communities	0.6 mg/L	
	Great Lakes Communities	0.6 mg/L	
	Non-Public Water Supplier (total cyanide)		
	Warmwater sport fish communities	40 mg/L	
	Cold water communities	40 mg/L	
	Warm water forage and limited forage	120 mg/L	
	fish communities and limited aquatic life		
	Groundwater	200 µg/L	
	Enforcement standard	40 µg/L	
	Preventive action limit		
WV	Water Quality Criteria (Free cyanide):		
	Warm water fishery streams	5 µg/L	
	Trout waters	5 µg/L	
	Small non-fishable streams	5 µg/L	
	Water contact, recreation	5µg/L	
	Water supply, public	5µg/L	
	Water Quality: Aquatic Life		CELDS 1994
AL	Freshwater: Acute	22.0 µg/L	
	Chronic	5.2 µg/L	
	Marine: Acute	1.0 µg/L	
	Chronic	--	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information	References
STATE (cont.)			
AZ	Acute Criteria For Aquatic & Wildlife		
	Cold water fishery (A&Wc)	22 µg/L, T(total recoverable)	
	Warm water fishery (A&Ws)	41 µg/L, T	
	Effluent dominated water (A&Wedw)	41 µg/L, T	
	Ephemeral (A&We)	84 µg/L, T	
	Chronic Criteria for Aquatic & Wildlife		
	A&Wc	5.2 µg/L, T	
	A&Ws	9.7 µg/L, T	
	A&Wedw	9.7 µg/L, T	
	A&We	19 µg/L, T	
IN	Acute Aquatic Criterion	22 µg/L	
	Continuous (4-day average) outside of mixing zone: Chronic aquatic criterion	5.2 µg/L	
MD	Ambient Surface Waters		
	Fresh water: Acute	22 µg/L	
	Chronic	5.2 µg/L	
	Estuarine: Acute	--	
	Chronic	--	
	Saltwater: Acute	1 µg/L	
	Chronic	--	
MN	Class A, B, C Waters (CN)	0.02 mg/L	
MS	Freshwater: Acute	22 µg/L	
	Chronic	5.2 µg/L	
	Saltwater: Acute	1.0 µg/L	
	Chronic	1.0 µg/L	
MO	Amenable to Chlorination:		
	Chronic toxicity	5 µg/L	
	Acute toxicity	22 µg/L	
NV	Single Value	0.052 mg/L	
	24-hour average	0.0035 mg/L	
	Propagation of wildlife	0.005 mg/L	
NY	Surface Waters & Groundwaters (CN)		
	A, A-S, AA, AA-S, B, C	5.2 µg/L	
	D	22 µg/L	
	SA, SB, SC	1.0 µg/L	
	SD	1.0 µg/L	
ND	Class I Streams (total cyanides)	0.005 mg/L	
NC	Freshwater	5.0 µg/L	
PR	Coastal Estuarine Waters	20.0 µg/L	
	Surface Waters	20.0 ug/L	
OK	Acute	45.93 µg/L	
	Chronic	10.72 µg/L	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information	References
STATE (cont.)			
OH	Outside Mixing Zone (Max. free cyanide)		
	Cold water	46 µg/L	
	Limited resource warm water	22 µg/L	
	30-day average-cold water	5.2 µg/L	
	Inside Mixing Zone (Max)		
	Cold water	45 µg/L	
	Limited resource warm water	92 µg/L	
VA	Freshwater (total cyanide)	5.2 µg/L	
	Saltwater (total cyanide)	1.0 µg/L	
VT	Acute	22 µg/L	
	Chronic	5.2 µg/L	
WY	Special A Waters	0.005 mg/L	
WI	Great Lakes (free cyanide)	22.4 µg/L	
	Cold water	22.4 µg/L	
	Warm water sport fish	46.2 µg/L	
	All others	46.2 µg/L	
	Water Quality: Agricultural Uses		
AZ	Agricultural Irrigation (AgI)	No numerical standard	
	Livestock Watering (Ag I)	200 µg/L, T	
NV	Ag L	0.2 mg/L	
	Groundwater Monitoring		CELDS 1994
AL		Yes	
CA		Yes	
CO		Yes	
IL		Yes	
KY		Yes	
LA		Yes	
MN		Yes	
MT		Yes	
NY		Yes	
OH		Yes	
SC		Yes	
TN		Yes	
VA		Yes	
WI		Yes	
WV		Yes	

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information	References
STATE (cont.)			
	Restricted Pesticides		
AL		Yes	
CA		Yes	
FL		Yes	
HI		Yes	
ME		Yes	
MI		Yes	
MT		Yes	
NH		Yes	
NY		Yes	
NM		Yes	
OR		Yes	
TX		Yes	
WA		Yes	
	Hazardous Constituents		CELDS 1994
AL		Yes	
CA	Land Disposal Restrictions	Yes	
CO		Yes	
DE	Land Disposal Restrictions	Yes	
IN	Allowable Concentration Using Leaching Test Method: Class IV Class III Class II	 0.2 mg/L 2 mg/L 5 mg/L	
IL		Yes	
KY		Yes	
LA	Reportable Quantity (HCN)	100 lbs	
MA	Land Disposal Restrictions	Yes	
MD		Yes	
ME		Yes	
MN		Yes	
MT		Yes	
NH		Yes	
NJ		Yes	
NE			

Table 7-1. Regulations and Guidelines Applicable to Cyanide (continued)

Agency	Description	Information	References
STATE (cont.)			
ND		Yes	
NY		Yes	
OH		Yes	
SC		Yes	
VA		Yes	
VT		Yes	
WI		Yes	
WV		Yes	
WY		Yes	

[a]Not classified as to its human carcinogenicity.

ACGIH = American Conference of Governmental Industrial Hygienists; avg = average; BAT = Best Available Technology Economically Achievable; BPT = Best Practicable Control Technology Currently Available; Ca = agent recommended by NIOSH to be treated as a potential occupational carcinogen; CELDs = Compute-aided Environmental Legislative Databases; CFR = Code of Federal Regulations; DWS = Domestic Water Source; EPA = Environmental Protection Agency; FBC = Full Body Contact; FC = Fish Consumption; FDA = Food and Drug Administration; FSTRAC = Federal State Toxicology and Regulatory Alliance Committee; HA = Health Advisories; IARC = International Agency for Research on Cancer; IRIS = Integrated Risk Information System; MCL = Maximum Contaminant Level; MCLG = Maximum Contaminant Level Goal; Mwh = megawatt hour; NAS = National Academy of Sciences; NATICH = National Air Toxics Information Clearinghouse; NCP = National Contingency Plan; NIOSH = National Institute for Occupational Safety and Health; NPDES = National Pollution Discharge Elimination System; NSPS = New Sewage Performance Standards; ODW = Office of Drinking Water; OERR = Office of Emergency and Remedial Response; OSHA = Occupational Safety and Health Administration; OSW = Office of Solid Waste; OTS = Office of Toxic Substances; OWRS = Office of Water Regulations and Standards; PBC = Partial Body Contact; PCBs = Polychlorinated Biphenyls; PEL = Permissible Exposure Limit; POTW = Publicly Owned Treatment Works; PSES = Pretreatment Standards for Existing Sources; PSNS = Pretreatment Standards for New Sources; RfC = Reference Concentration; RfD = Reference Dose; REL = Recommended Exposure Limit; SNARL = Suggested No-Adverse-Response Level; SOCMI = Synthetic Organic Chemical Manufacturing Industry; TLV = Threshold Limit Value; TSDF = Treatment, Storage, and Disposal Facility; TWA = Time-weighted Average; VOC = Volatile Organic Compounds; WHO = World Health Organization